IN THE SPECIFICATION

Please amend the following cited specification paragraphs:

[15] The tank temperature sensor 120 provides a temperature reading to the controller 118. In one embodiment, the controller 118 evaluates the temperature reading with a predetermined first threshold and energizes the heat pump 104 if the temperature drops below the first threshold, indicating that the water temperature in the tank 102 ~~104~~ is not high enough to meet hot water demand. Evaluating water temperature using two separate thresholds provides a more accurate indication of the demand for hot water without requiring recirculation of cold water into the hot water at the top of the tank. As a result, the heat pump 104 will operate only in response to hot water demand and not when stratification is disturbed due to recirculation.

[19] Alternatively, a tank outlet temperature sensor 124, which may be any temperature sensor near the bottom of the tank 102, ~~104,~~ may be included to measure the water temperature in the tank outlet pipe 108 directly. Using two sensors, one near the top of the tank 102 and one near the bottom of the tank 102 or along the tank outlet pipe 108, provides greater control over heat pump operation than a single sensor because the sensor near the top of the tank 102 can be used to decide when to turn the heat pump on and the sensor near the bottom of the tank 102 or in the tank outlet pipe 108 can be used to decide when to turn the heat pump off. Regardless of the specific location of the sensors, measuring water temperature in a given pipe should be conducted when the water pump 114 is operating and moving water through the system to obtain the most relevant reading.

[20] Figure 2 illustrates a method of controlling the heat pump in this manner according to one embodiment of the invention. In this embodiment, the tank temperature sensor 120 monitors the tank temperature and sends the temperature reading to the controller 118 (block 200). The controller 118 checks whether the tank temperature reading falls below the first threshold (block 201). If so, the heat pump is energized (block 202) to heat water as it circulates through the heat pump. This will cause the overall water temperature in the tank 102 ~~104~~ to rise gradually as the

heated water mixes with the cooler water in the tank 102. ~~104.~~ The temperature of the heated water flowing through the tank inlet pipe 106 is then monitored (block 204). The temperature reading is used to calculate the water temperature in the tank outlet pipe 108 based on the system heating capacity and the water flow rate, as explained above (block 206). The accuracy of the temperature calculation will depend on how closely the capacity and flow rate values match the system's actual operating characteristics. If the calculated tank outlet pipe temperature reaches a second threshold (block 208), indicating that the hot water temperature has met hot water demand, the heat pump 104 is de-energized (block 210) until the tank water temperature drops below the first threshold again.

[21] Alternatively, or in addition, the system may evaluate a temperature reading from the tank outlet pipe 108 directly. Figure 3 illustrates a method according to another embodiment of the invention. In this embodiment, the water temperature in the tank outlet pipe 108 is monitored directly by the tank outlet temperature sensor 124, thereby eliminating the need to estimate the tank outlet pipe temperature as in the previous embodiment. In this embodiment, the method simply de-energizes the heat pump 104 if the temperature in the tank outlet pipe 108 ~~106~~ reaches the second threshold (block 220).